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PARK, VAUGHAN & FLEMING LLP  
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EXAMINER

HWANG, JOON H

ART UNIT PAPER NUMBER

2172

DATE MAILED: 08/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/920,790

Applicant(s)

SUTHERLAND, JAMES BRYCE

Examiner

Joon H. Hwang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 01 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

1. The pending claims are 1-36.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Srinivasan (U.S. Patent No. 5,799,309).

With respect to claim 1, Srinivasan discloses generating a retrieval query to read target objects for a collection of source objects, the collection of source objects having many-to-many relationships with the target objects, the collection of source objects and target objects being respectively stored in one or more source tables and target tables in the database, and the many-to-many relationship being defined in the database by using an intermediate join table of the source tables and the target tables (abstract, fig. 1, fig. 4, fig. 7, lines 21-46 in col. 4, lines 31-44 in col. 6, lines 27-40 in col. 7, lines 20-28 in col. 8, lines 50-62 in col. 9, lines 7-20 in col. 11, lines 29-43 and 59-67 in col. 12, and line 40 in col. 18 thru line 27 in col. 20). Srinivasan discloses selecting join table information from the many-to-many join table relating to the collection of source objects and target objects to enable matching of the target objects and the source objects using the join table information (fig. 1, fig. 7, lines 21-46 in col. 4, lines 31-44 in col. 6, lines 27-40 in col. 7, lines 20-28 in col. 8, lines 50-62 in col. 9, lines 7-20 in col. 11, lines 29-

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43 and 59-67 in col. 12, and line 40 in col. 18 thru line 27 in col. 20). Srinivasan discloses retrieving the matched target objects by executing the retrieval query on the database (fig. 1, fig. 7, lines 17-28 in col. 3, lines 21-46 in col. 4, lines 31-44 in col. 6, lines 27-40 in col. 7, lines 20-28 in col. 8, lines 50-62 in col. 9, lines 7-20 in col. 11, lines 29-43 and 59-67 in col. 12, and line 40 in col. 18 thru line 27 in col. 20).

With respect to claim 2, Srinivasan discloses specifying batch (prefetch) readable relationships on a source query for reading the collection of source objects, generating a nested query for reading related objects nested in the target objects, appending query information of the target objects to the nested query, and retrieving the related objects by executing the nested query (fig. 1, fig. 4, fig. 7, lines 43-56 in col. 2, lines 17-28 in col. 3, line 1 in col. 4 thru line 40 in col. 7, lines 4-28 in col. 8, lines 10-21 and 50-62 in col. 9, lines 6-14 in col. 10, lines 29-43 in col. 12, lines 12-23 in col. 13, line 40 in col. 18 thru line 65 in col. 20, and lines 25-38 in col. 21).

With respect to claim 3, Srinivasan teaches obtaining a source expression tree relating to the collection of the source objects, building a target expression tree defined by the many-to-many mapping including a join between the target tables and the join table, combining the source expression tree and the target expression tree to produce a combined expression tree, and generating the retrieval query based on the combined expression tree (fig. 1, fig. 4, fig. 7, lines 43-56 in col. 2, lines 17-28 in col. 3, line 1 in col. 4 thru line 40 in col. 7, lines 4-28 in col. 8, lines 10-21 and 50-62 in col. 9, lines 6-14 in col. 10, lines 29-43 in col. 12, lines 12-23 in col. 13, line 40 in col. 18 thru line 65 in col. 20, and lines 25-38 in col. 21).

With respect to claim 4, Srinivasan teaches obtaining the target expression tree from mapping meta-data which contains information as to how object classes and relationships of the object model map to tables and foreign keys in the database (line 1 in col. 4 thru line 18 in col. 6 and line 27 in col. 7 thru line 28 in col. 8).

With respect to claim 5, Srinivasan teaches obtaining the target expression tree from mapping meta-data which includes a list of key and value pairs of the many-to-many join table (fig. 1, fig. 4, fig. 7, lines 43-56 in col. 2, lines 17-28 in col. 3, line 1 in col. 4 thru line 40 in col. 7, lines 4-28 in col. 8, lines 10-21 and 50-62 in col. 9, lines 6-14 in col. 10, lines 29-43 in col. 12, lines 12-23 in col. 13, line 40 in col. 18 thru line 65 in col. 20, and lines 25-38 in col. 21).

With respect to claim 6, Srinivasan discloses executing the retrieval query on the database for reading the target objects, obtaining target object information and join table information from the join table, and appending the target object information and join table information to the retrieval query (fig. 4, fig. 7, lines 43-56 in col. 2, lines 17-28 in col. 3, line 1 in col. 4 thru line 40 in col. 7, lines 4-28 in col. 8, lines 10-21 and 50-62 in col. 9, lines 6-14 in col. 10, lines 29-43 in col. 12, lines 12-23 in col. 13, line 40 in col. 18 thru line 65 in col. 20, and lines 25-38 in col. 21).

With respect to claim 7, Srinivasan discloses the join table information including foreign key values and appending the foreign key values to the retrieval query (lines 43-56 in col. 2, lines 17-28 in col. 3, line 1 in col. 4 thru line 40 in col. 7, lines 4-28 in col. 8, lines 10-21 and 50-62 in col. 9, lines 6-14 in col. 10, lines 29-43 in col. 12, lines 12-23 in col. 13, line 40 in col. 18 thru line 65 in col. 20, and lines 25-38 in col. 21).

With respect to claim 8, Srinivasan teaches appending the target table information and the join table information to a select clause of a select statement (fig. 19, lines 43-56 in col. 2, lines 17-28 in col. 3, line 1 in col. 4 thru line 40 in col. 7, lines 4-28 in col. 8, lines 10-21 and 50-62 in col. 9, lines 6-14 in col. 10, lines 29-43 in col. 12, lines 12-23 in col. 13, line 40 in col. 18 thru line 65 in col. 20, and lines 25-38 in col. 21).

With respect to claim 9, Srinivasan teaches obtaining the target objects, populating relationships of the source objects with the target objects by comparing a primary key value of each source object with a foreign key value of each target object using the foreign key values stored in the retrieval query, and matching each source object with matched target objects (lines 43-56 in col. 2, lines 17-28 in col. 3, line 1 in col. 4 thru line 40 in col. 7, lines 4-28 in col. 8, lines 10-21 and 50-62 in col. 9, lines 6-14 in col. 10, lines 29-43 in col. 12, lines 12-23 in col. 13, line 40 in col. 18 thru line 65 in col. 20, and lines 25-38 in col. 21).

With respect to claim 10, Srinivasan discloses obtaining nested specification information representing joins relating to a source object and related objects which are joined with the source object with multi-level relationships (fig. 1, fig. 7, lines 43-56 in col. 2, line 1 in col. 4 thru line 18 in col. 6, lines 28-40 in col. 7, lines 14-28 in col. 8, lines 10-21 in col. 9, lines 50-62 in col. 9, lines 6-14 in col. 10, lines 29-43 in col. 12, lines 12-23 in col. 13, and line 40 in col. 18 thru line 65 in col. 20). Srinivasan discloses obtaining parent query information representing a parent query for reading one or more parent objects at a parent level, generating a nested query for query objects of next lower level which is next lower than the parent level, appending to the nested query the

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parent query information and the joins using the nested specification information, and retrieving the objects of next lower level by executing the nested query on the database (fig. 4, fig. 7, lines 17-28 in col. 3, line 20 in col. 6 thru line 26 in col. 7, lines 4-13 in col. 8, lines 10-21 and 50-62 in col. 9, lines 6-14 in col. 10, line 40 in col. 18 thru line 65 in col. 20, and lines 25-38 in col. 21).

With respect to claim 11, Srinivasan teaches obtaining the nested specification information from mapping meta-data which contains information as to how object classes and relationships of the object model map to tables and foreign keys in the database (line 1 in col. 4 thru line 18 in col. 6 and line 27 in col. 7 thru line 28 in col. 8).

With respect to claim 12, Srinivasan discloses specifying batch (prefetch) readable relationships to the parent query for allowing batch reading of the related objects (line 27 in col. 7 thru line 28 in col. 8 and line 50 in col. 9 thru line 4 in col. 11).

With respect to claim 13, Srinivasan discloses determining the batch readable relationships based on the bested specification (fig. 4, fig. 7, lines 17-28 in col. 3, line 20 in col. 6 thru line 26 in col. 7, lines 4-13 in col. 8, lines 10-21 and 50-62 in col. 9, lines 6-14 in col. 10, line 40 in col. 18 thru line 65 in col. 20, and lines 25-38 in col. 21).

With respect to claim 14, Srinivasan teaches setting automatic batch (prefetch) reading for automatically generating the nested query for reading objects of lower levels (fig. 4, fig. 7, lines 17-28 in col. 3, line 20 in col. 6 thru line 26 in col. 7, lines 4-13 in col. 8, lines 10-21 and 50-62 in col. 9, lines 6-14 in col. 10, line 40 in col. 18 thru line 65 in col. 20, and lines 25-38 in col. 21).

With respect to claim 15, Srinivasan teaches generating a single query for each type of relationships at each level (fig. 4, fig. 7, lines 17-28 in col. 3, line 20 in col. 6 thru line 26 in col. 7, lines 4-13 in col. 8, lines 10-21 and 50-62 in col. 9, lines 6-14 in col. 10, line 40 in col. 18 thru line 65 in col. 20, and lines 25-38 in col. 21).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Srinivasan (U.S. Patent No. 5,799,309).

With respect to claim 16, Srinivasan discloses the claimed subject matter as discussed above. Srinivasan does not explicitly disclose delaying execution of the nested query until the relationship of the source object is accessed. However, Srinivasan discloses constructing the nested query with the accessed relationship of the source object (fig. 4, fig. 7, lines 17-28 in col. 3, line 20 in col. 6 thru line 26 in col. 7, lines 4-13 in col. 8, lines 10-21 and 50-62 in col. 9, lines 6-14 in col. 10, line 40 in col. 18 thru line 65 in col. 20, and lines 25-38 in col. 21) in order to optimize the query for the optimized query processing, which teaches delaying execution of the nested query until the relationship of the source object is accessed. Therefore, based on Srinivasan, it would have been obvious to one having ordinary skill in the art at the time the invention



was made to delay execution of the query until the relationship of the source object is accessed in order to optimize the query for the optimized query processing.

6. Claims 17-23 are essentially the same as claims 1-9 except that it sets forth the claimed invention as a system rather than a method and rejected for the same reasons as applied hereinabove.

7. Claims 24-30 are essentially the same as claims 10-16 except that it sets forth the claimed invention as a system rather than a method and rejected for the same reasons as applied hereinabove.

8. The subject matter of claims 31-33 are rejected in the analysis of claim 1 above, and these claims are rejected on that basis.


9. The subject matter of claims 34-36 are rejected in the analysis of claim 10 above, and these claims are rejected on that basis.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joon H. Hwang whose telephone number is 703-305-6469. The examiner can normally be reached on 9:30-6:00(M~F).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JOHN E BREENE can be reached on 703-305-9790. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Joon Hwang  
7/23/04



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